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T.	T².	T³.	g.	ω.	$-☊$.	L′.	π'.	L.
−22·616398	511·49	−11568	$38^\circ\ 32'\ 44''$	$135^\circ\ 4'\ 45''$	$142^\circ\ 17'\ 0''$	$32^\circ\ 56'\ 31''$	$240^\circ\ 49'\ 21''{\cdot}5$	$31^\circ\ 20'\ 9$

V − L.	V′ − L′.	V − V′.	U.	$\frac{d}{dt}$(V − V′).	$\frac{dU}{dt}$.	$p - p'$.
$+11171''$	$+3341''$	$+2048''$	$+952''$	$1816''{\cdot}5$	$-179''$	$+3615''$

Place.	Lat. N.	Long. E.	Date.	Local Mean Time in degrees.	h = Local Sidereal Time in degrees.	v'.
Athens.	$37^\circ\ 56'$	$23^\circ\ 38'$	−462 April 30	$46^\circ{\cdot}331$	$79^\circ{\cdot}2725$	$\underbrace{+743{\cdot}5+1945-111}=+2577''{\cdot}5$

u'	$\frac{dv'}{dt}$.	$\frac{du'}{dt}$.	$\frac{d}{dt}(V-V'-v')$ denom. of k.	$\frac{d}{dt}(U-u')-$ num. of k.	k.	Residual − k (V − V − v' − (Uu − ′).
$\underbrace{+2033-1129}=+904''$	$\underbrace{+440+11}=+451''$	$-49''$	$+1365''{\cdot}5$	$-130''$	−0·095	$+2''$

The eclipse is therefore total at Athens.

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The Total Solar Eclipse of 1911 *April* 28.

By A. M. W. Downing, D.Sc., F.R.S.

As inquiries have already been addressed to me with regard to this eclipse, it may perhaps be convenient to publish, thus early, some details respecting it which I have collected.

The most suitable place for observation appears to be Vavau, one of the Tonga Islands. This island is nearly on the central line of the shadow, and is otherwise a most convenient observing station. The following particulars with regard to it are extracted from the *Admiralty Sailing Directions, Pacific Islands*, vol. ii., 1908.

"Vavau Island is nearly 9½ miles in length east and west, with an extreme breadth from north to south of 6¾ miles. The island is covered with thick bush and cocoanut trees, with numerous patches of land under cultivation."

"Neiafu, situated on the south-west coast of Vavau, one mile eastward of Talau Hill (see plan), is the port of call for the mail steamers, which call here from Sydney every four weeks. The Governor resides here, and it is the headquarters of some English and German trading firms. There is a good wharf, which vessels of 18 feet draught can go alongside."

"The country affords plenty of vegetables and fruit. Water

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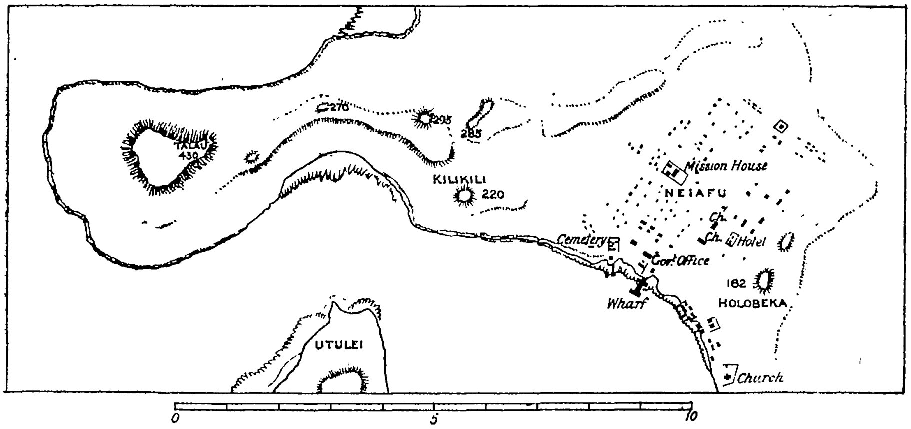
in wells is scarce and indifferent; rainwater has to be collected and stored in tanks. Labour is difficult to obtain; the natives will not work under a dollar a day. The traders import labour from other Pacific islands."

The plan of Neiafu and its environs, here reproduced, is taken from the official chart published by the Hydrographic Office.



10 cables = 1 sea mile.

Neiafu, Vavau Island.

The following astronomical particulars of the eclipse, as seen from Neiafu, are computed from the data of the *Nautical Almanac*. For the convenience of observers, I have added the intervals in time from the instant when the cusps subtend an angle of specified value at the Sun's centre to the commencement of totality. It is to be noted that, with the existing errors of the lunar tables, the times of the contacts given below are, in each case, several seconds too late.

NEIAFU.—*Long.* 173° 59′ W. *Lat.* 18° 39′ S.

Local Mean Time.

						Angle from	
						North Point.	Vertex.
		d	h	m	s	°	°
First contact . .	April	27	20	26	47	230	350
Total eclipse . .		27	21	37	1·7	36	169
		27	21	40	38·5	242	15
Last contact . .		27	22	58	48	49	203

	m	s
Duration of totality	3	36·8
Sun's altitude at totality . . .		43°
Sun's azimuth (from N.) at totality .		49

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Angle of Cusps.	Time before Commencement of Totality.
°	s
90	42
60	15
45	9
30	4
15	1

I append some details of a meteorological character, extracted from the volume of *Sailing Directions* referred to above, which may be useful to observers as affording an indication of the probable weather conditions at the time of the eclipse. They are deduced from observations taken at Neiafu during the years 1890–91. The "amount of cloud" given below is not published in the *Sailing Directions*, but has been kindly communicated to me by Dr. W. N. Shaw, F.R.S., having been inferred from the weather records obtained at Neiafu during the above-mentioned years, which are preserved in the Meteorological Office.

Month.	Mean Temperature.		Rain.		Amount of Cloud at 9 A.M. (Scale 0–10).
	Max.	Min.	Total Fall.	No. of Days.	
	°	°	in.		
April . .	85	73	9·24	18	6·5
May . .	83	71	3·04	9	5·7

Prevailing direction of wind at 9 A.M., S.E.

Average force (Beaufort scale) ,, 4

H.M. Nautical Almanac Office:
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Observations of Jupiter during the Apparition of 1907–8.

By the Rev. T. E. R. Phillips. (Plate 1.)

The planet Jupiter was in "opposition" on 1908 January 29, in R.A. $8^h\ 45^m\ 0^s$, Dec. 18° 52′ 48″ N., in the constellation Cancer. It was therefore very favourably placed for observers in the N. hemisphere, and between the latter part of September and the second week in June I was able to make observations on 126 occasions. These consisted of (1) notes and drawings of the forms and colours of the surface markings; (2) transit observations of spots in various latitudes across the central meridian of the illuminated disc; and (3) a few notes of special satellite phenomena.

All these observations were made with the 12¼-inch equatorial reflector that belonged to the late Dr. W. A. Kibbler, which instrument was substituted in 1907 September for the 9¼-inch reflector that had been in use for some years. The mirror of the Kibbler telescope—one of With's "reserves"—was re-figured a few years ago by Mr. Calver.

The following is a summary of the principal points of interest presented by the observations:—

(1) *Surface Markings.*

There were no very striking changes—at any rate at the beginning of the apparition—as compared with the planet's appearance in 1906–7, and the general aspect of the disc will be seen from the accompanying drawings.

The N. Equatorial Belt, which had broadened so remarkably the previous year, was at first still obviously triple, and for several months retained its distinctive colouring. The southern part of the belt was an intense brick-red, which merged gradually into orange and yellow in the central regions, and the narrow band which formed the north edge was blue. But during the latter part of the apparition the red and orange seemed to fade somewhat rapidly, and by the end of April the colour of the central portions of the belt had diminished to such an extent that the above-mentioned blue band seemed quite a separate object, and might well be taken for the N. Temperate Belt. It should be said that although there were still a number of dark streaks and white spots and gaps at the S. edge of the belt, they were generally far less conspicuous than in 1906–7. On the other hand, there were some interesting details in the middle portion, which (especially near the longitude of the Red Spot) exhibited rapid and somewhat puzzling changes.

The Equatorial Zone was again mottled with numerous light and dusky regions, and as usual was crossed by a series of delicate wisps.